

SCRAP TIRE MANAGEMENT

Early automobiles were not very enjoyable to ride in because they featured rigid metal wheels that made every bump in the road a painful experience. The invention of the rubber tire changed the fate of the automobile by allowing for a smoother, more comfortable ride. Clearly, this development was instrumental in helping to usher in the automobile era. The growing popularity of the automobile led to the production of more and more tires and ultimately to an ever-increasing number of scrap tires to manage. While retreading old passenger car tires was well established for many years, the decline of this industry marks the start of the scrap tire management problem in the United States. This problem is two-pronged in that it regards those scrap tires that are newly generated each year and those scrap tires that have been illegally dumped in the environment over the course of many years.

Management of Newly Generated Scrap Tires

It is estimated that 8.4 million scrap tires are generated each year in New Jersey. This estimate is based upon the nationally accepted formula for scrap tire generation of one scrap tire per person per year. Based upon recent research conducted by the Department for the Northeast Waste Management Officials' Association (NEWMOA), scrap tires generated in New Jersey are managed at several facilities in New Jersey, as well as numerous out-of-state facilities. Major in-state scrap tire management facilities include both processors and storage and transfer operations. Scrap tires processed in New Jersey are marketed as playground cover material, equestrian track surfacing, alternative fuel and for civil engineering applications, among other things. While scrap tire processing in New Jersey has grown over the years, there is still a need for additional scrap tire processing facilities, particularly in the northern part of the state.

In general, scrap tires handled by in-state storage and transfer operations are directed toward out-of-state fuel markets. A closer look at New Jersey's scrap tire trail for the year 2000 (see Appendix table E-1) is quite illuminating in that it shows the long distances scrap tires are transported for final management. More specifically, scrap tires from New Jersey are shipped to distant facilities in Connecticut, Delaware, Maryland, Massachusetts, New York and Pennsylvania. In addition, scrap tires that still have usable tread are often shipped to Mexico and other Central American countries for reuse.

The prices charged for the receipt of scrap passenger tires at both in-state and out-of-state facilities have increased in the last two years after a period of declining tipping fees. The Department's most recent price survey, conducted in March, 2002, (see Appendix table E-2) found tipping fees ranging from \$60.00 per ton to \$200.00 per ton. The average price charged at the major facilities in the area is approximately \$100.00 per ton. Using the nationally accepted standard of 20 pounds per passenger tire, a \$100.00 per ton tipping fee is equivalent to a price of \$1.00 per scrap tire.

In general, scrap tire management facilities that charge a competitive tipping fee will have no difficulty in attracting scrap tires. The difficulties that such facilities face pertain

to finding end markets for the tire chips produced or whole tires received. As noted above, scrap tire end markets include playground and equestrian track surfacing, alternative fuel and civil engineering applications, among others. While these end markets are stable, existing end markets need to be expanded while new end markets need to be established in order to create market demand that can keep pace with scrap tire supply. The NJDEP has several market development initiatives underway that will hopefully lead to new and expanded end markets for scrap tires. For example, the Department is working to promote the use of scrap tire chips in various county landfill construction applications. Thus far, Salem County has used scrap tire chips as a protective layer over the leachate collection system and as bedding for the leachate recirculation/gas collection system. While other counties are considering such civil engineering applications, no other projects are pending.

The Department has also provided technical and financial support for an innovative project involving the use of scrap tires as a flow control device to mitigate scouring around bridge piers. The technology was developed by Continuum Dynamics, Inc. (CDI), a local engineering research and development firm, and has been embraced by the New Jersey Department of Transportation (NJDOT). A demonstration project is planned for the Route 46 bridges over the Passaic River and is scheduled to commence in the spring of 2003. According to CDI, there are 400 bridges in New Jersey and over 18,000 bridges in the United States that are "scour critical" which means that they may fail during severe run-off conditions if they are not remediated. Based upon this information, it is clear that a significant number of scrap tires could potentially be utilized if a percentage of these bridges were remediated using CDI's scrap tire scour mitigation system. While the number of scrap tires used per bridge would vary for a number of reasons, it is clear that this technology and demonstration project could lead to the development of a new and important end market for scrap tires. In addition, it could yield bridge engineering benefits that would greatly benefit the NJDOT's bridge maintenance efforts.

Another civil engineering application that the NJDEP is exploring is the use of scrap tire chips as a substitute for gravel in the trenches of septic systems. Presently, such an application would not be allowed pursuant to the definition for "filter material" found in the Department's Standards for Individual Subsurface Sewage Disposal Systems set forth at N.J.A.C. 7:9A-2.1. While this practice is not currently allowed in New Jersey, it is an accepted practice in many states. The approval of this end use of scrap tire chips in New Jersey would have a very positive impact upon the local scrap tire recycling market since each septic system would utilize a significant amount of scrap tire chips. For example, a field trial conducted in Vermont wherein two-inch tire shreds were installed in two 4-foot wide by 70-foot long by 1-foot deep trenches utilized 25 - 30 cubic yards of tire shreds, which translates into about 1,350 tires. In light of the fact that over 10,000 new septic systems are installed annually in New Jersey, this end use shows much promise. Based upon the work done by a number of states, as well as a recent study conducted for the Chelsea Center for Recycling and Economic Development by the Department of Civil Engineering, University of Massachusetts Dartmouth, the NJDEP is studying the matter further to determine whether scrap tire chips could be a suitable filter material for septic systems in New Jersey.

Illegal Dumping and Scrap Tire Stockpiles

The Department's research for NEWMOA also revealed that despite the increasing number of legal options available to generators of scrap tires, illegal dumping remains a significant problem. It should be noted that unless mandated for recycling in a county recycling plan, scrap tires may still be legally disposed as solid waste. Notwithstanding this fact, illegal dumping continues to occur in New Jersey. Often, illegal dumping on a well-concealed site continues unabated for years until a large stockpile is created and ultimately discovered by local officials. Unfortunately, this scenario has been played out in New Jersey many times, especially in the southern part of the state. Typically, scrap tire dumpsites are situated on private property and contain anywhere from 30,000 to 3,000,000 scrap tires, (see Appendix table E-3). Furthermore, the owners of these properties are often unable to pay cleanup costs and fines, are deceased or have disappeared. Compounding this problem is the fact that New Jersey has never had a dedicated source of funding for scrap tire management and stockpile remediation and therefore has not been able to fund cleanups of these sites. As a result, most of these stockpiles remain intact and in need of attention. These scrap tire stockpiles are not only an eyesore, but also pose a serious environmental and public health threat.

Scrap tire stockpiles represent a significant fire safety threat. Once ignited, either through natural causes or more typically by arsonists, scrap tire fires are difficult to extinguish. The black clouds of acrid smoke from a scrap tire fire can be seen for miles around and often burn for days or weeks. Oftentimes, nearby residents must be evacuated from their homes when such fires are ignited. In addition to the air pollution and respiratory concerns raised by scrap tire fires, the oily runoff from the burning tires also contaminates the soil and sometimes even the groundwater located beneath the site. In addition to the environmental hazards associated with scrap tire stockpile fires, they also cost hundreds of thousands of dollars to fight and extinguish. Furthermore, the additional cost of cleaning a tire fire site to mitigate any hazardous waste liability can escalate to millions of dollars.

Mosquitoes are also a problem associated with scrap tire stockpiles. Abandoned scrap tires are perfect breeding grounds for mosquitoes because rainwater can easily get into the tires creating the small stagnant pools needed for mosquito propagation. For many years, the primary concern associated with such mosquitoes was their ability to spread encephalitis. Notwithstanding the severity of this disease, recent attention has focused on the role that mosquitoes play in transmitting the potentially deadly West Nile Virus. Clearly, the threat of the West Nile Virus has heightened interest in scrap tire stockpile remediation. Scrap tire stockpiles are also prime locations for disease carrying rodents.

As mentioned above, scrap tire stockpiles, as well as scrap tires abandoned in parks, along roadways and in vacant lots, also spoil the aesthetic beauty of the environment. Clearly, a landscape littered with scrap tires is diminished in value and has a negative impact on the quality of life for New Jersey residents. While only a small percentage of

the total solid waste stream in regard to tonnage, scrap tires are obviously a big problem in terms of their impact on the environment.

There has been some progress in the area of scrap tire stockpile remediation. The Tire Derived Products/FraPaul Construction site in Elizabeth and the Nea-Para Rubber Co. site in Hamilton Township (Mercer County) were both cleaned-up over the past two years. It is estimated that the site in Elizabeth contained 200,000 - 300,000 scrap tires while the Hamilton Township site contained 40,000 scrap tires. In addition, the Moore & Sons scrap tire stockpile in Quinton was also recently remediated. The Department's Enforcement office estimates that this site contained 50,000 - 100,000 scrap tires. Furthermore, the removal of scrap tires from the James Brown site in Quinton was begun in the fall of 2001. Based upon the funding available for this project, it is estimated that 275,000 scrap tires will be removed from this site which contains an estimated 2 to 3 million scrap tires. These projects were funded through various special legislative appropriations, not through any Departmental programs.

The NJDEP did provide grant funds to counties in the fall of 2000 for scrap tire cleanup programs that focused on removing scrap tires from roadsides, vacant lots and parklands. Counties could also use these funds for scrap tire amnesty days, i.e., programs wherein residents can deposit scrap tires at county collection centers at no cost, among other things. The Department distributed \$2.4 million among its 21 counties for these efforts.

In the fall of 2001, the Department made available an additional \$2.4 million to counties for large-scale scrap tire pile cleanup projects. As part of this program, grantees were required to provide a funding match equal to 25% of the Department's grant. The maximum grant allowed under this program was \$200,000. While three counties - Burlington (\$200,000), Cumberland (\$7,000) and Salem (\$200,000) - received funding under this program, the vast majority of this fund remained untouched due to the lack of applications received by the Department.

As a result of this situation, the focus and application requirements of the program were changed in April, 2002 to allow for both large-scale and small-scale scrap tire cleanup efforts. In addition, the matching funding requirement and \$200,000 cap associated with this program were dropped. These changes to the program led to a second round of grant applications and the disbursement of the remaining funds in June, 2002. Nine counties received grants ranging from \$30,000 to \$750,000 for various scrap tire cleanup projects through this program. It should be noted that Burlington County and Salem County received funds in both rounds of this grant program. These Departmental grant programs were funded through special legislative appropriations, not through a dedicated source of funding.

Recommendations

The Department recommends that the Legislature establish a dedicated source of funding for scrap tire management and stockpile remediation. By creating such a fund, the Legislature will enable the NJDEP to be proactive in regard to scrap tire stockpile

cleanup rather than reactive. This not only benefits New Jersey in terms of environmental quality and public health and safety, but also in monetary terms. As noted above, the price paid for being reactive can be quite significant. The cost to fight and extinguish a scrap tire fire is very high, as is the cost of cleaning a tire fire site to mitigate any hazardous waste liability resulting from a fire. It is also recommended that a portion of any dedicated scrap tire management fund be allocated for market development initiatives and related research. The existence of such a funding source would enable the Department to embark on projects that will help expand current end use markets for scrap tires or lead to the creation of new end uses of scrap tires.

The absence of a dedicated source of funding for scrap tire management and stockpile remediation has hampered the Department's efforts for many years. Clearly, it is a major reason why so many scrap tire stockpile sites remain intact and a threat to the environment and public health. The vast majority of states have a dedicated source of funding in place for scrap tire management. In fact, New Jersey is one of just seventeen states that have no fee system in place in support of scrap tire management. These funding programs typically rely on a fee that is assessed on the purchase of new tires or the transfer of a vehicle registration. The Department considers either approach workable and would be willing to work with the Legislature on other funding strategies.